

REMARKS

Applicants hereby withdraw their Notice of Appeal dated December 11, 2002 and concurrently file a Request for continued examination for the above-identified Patent Application. Additionally, in response to the Final Office Action, dated September 11, 2002, paper no. 9, please amend the above-identified application as indicated on the following pages. Claims 1, 2, 7, 10, 13, 16 and 17 have been amended. Claims 14 and 15 have been cancelled. New claims 18 through 27 have been added. The application now includes claims 1, 2, 5 through 7, 10, 13 and 16 through 27, with claims 1, 10 and 23 being independent claims. Favorable reconsideration of the application, as amended, is respectfully requested.

In the Official Letter, the Examiner rejected claims 1, 2, 5 through 7, 10 and 13 through 17 under 35 U.S.C. §103(a) as being unpatentable over the combined teaching of German Patent No. DE 36 19 525 C to Bendig and applicant's admitted prior art as set forth in pages 1 and 2 of the specification. The Examiner stated that the Bendig reference teaches a low pressure casting process for casting a motor vehicle wheel that includes application of vibration to the casting mold during the solidification process of the molten metal. The Examiner also stated that the Bendig reference does not state the structure of the casting mold, but that the admitted prior art shows that it is conventional to gravity or pressure cast a vehicle wheel with a multi-segment mold. The Examiner then concluded that it would be obvious to use the prior art multi-segment mold with the vibration taught by the Bendig reference. The Examiner further stated that it would have been obvious to use an appropriate type of vibrator and to place the vibrator in an appropriate location upon the mold. The Examiner also stated that it would have been obvious to obtain the optimal timing of the vibration through routine experimentation.

Applicants have amended independent claim 1 to recite a movable top core segment that co-operates with base and side segments to define a gravity fed mold for gravity casting a vehicle wheel component. Similarly, applicants have amended independent claim 10 to recite providing a multi-segment gravity fed mold having a top core for gravity casting a wheel component. Applicants have carefully reviewed the Bendig reference and obtained a translation of the claims contained therein, a copy

which is enclosed. Applicants believe that the Bendig reference is directed toward low-pressure casting machines. Further, applicants believe that nothing in the Bendig reference shows or suggests gravity casting of wheels. Accordingly, applicants believe that there would be no motivation to apply the vibration of a low pressure casting machine to a gravity casting apparatus, as recited in independent claim 1 and 10. Thus, applicants believe that it would not be obvious to combine the teachings of the Bendig reference with the prior art of the present invention. Therefore, applicants believe that amended independent claims 1 and 10 are patentable over the cited prior art and respectfully request that the Examiner withdraw his rejection of the claims.

Claims 2 and 5 through 7 are dependent upon amended independent claim 1. Accordingly, for the reasons given above, applicants also believe that claims 2 and 5 through 7 also are patentable over the cited prior art and respectfully request that the Examiner withdraw his rejection of the claims.

Similarly, claims 13, 16 and 17 are dependent upon amended independent claim 10. Accordingly, for the reasons given above, applicants also believe that claims 13, 16 and 17 also are patentable over the cited prior art and respectfully request that the Examiner withdraw his rejection of the claims.

In view of the amendments and above remarks, it is believed that the application is in condition for allowance.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

Substitute the following amended Claims 1, 2, 7, 10 and 13 for the pending claims of the same number:

1. (Twice Amended) An apparatus for casting a vehicle wheel component comprising:

a mold base segment;
a plurality of movable mold side segments;
a movable top core segment, said top core segment co-operating with said base and side segments to define a gravity fed mold for gravity casting a vehicle wheel component; and

a [pneumatically powered] vibration device mounted adjacent to said top core segment [and is], said vibration device being operative to selectively vibrate said top core segment [when supplied with compressed air, said pneumatically powered vibration device having an inlet port for receiving compressed air;

a supply of compressed air connected to said inlet port of said vibration device;
a solenoid valve included in said compressed air supply for controlling the flow of compressed air into said inlet port of said vibration device; and

an adjustable pressure regulator included in said compressed air supply, said pressure regulator controlling the speed and force of said vibration device].

2. (Amended) The apparatus according to claim [1] 19 wherein said vibration device is a ball vibrator.

7. (Twice Amended) The apparatus according to claim [1] 19 wherein said vibration device is a reciprocating hammer.

10. (Amended) A method for forming a vehicle wheel component casting comprising the steps of:

(a) providing a multi-segment gravity fed mold having a top core for gravity

casting the wheel component, the top core having a [pneumatically powered] vibration device mounted adjacent thereto, the vibration device being selectively operable to vibrate the mold top core;

(b) filling the cavity of the wheel component mold by gravity with a charge of molten metal;

(c) [supplying compressed air to] activating the vibration device to vibrate the top core upon completion of the filling of the mold cavity with molten metal [for a portion of the time required for the molten metal to solidify];

(d) [shutting off the supply of compressed air to] deactivating the vibration device [after the portion of the time required for the metal to solidify has elapsed];

[(e) allowing the metal in the mold cavity to continue to cool until the metal is solidified;]

[(f)] (e) opening the mold; and

[(g)] (f) removing the wheel component casting from the mold.

13. (amended) The method according to claim 10 wherein the [portion of the mold] top core is vibrated in step (c) after a predetermined time period has elapsed following the filling of the mold cavity.

Cancel claims 14 and 15.

Substitute the following amended Claims 16 and 17 for the pending claims of the same number:

16. (Amended) The method according to claim [14] 12 wherein the multi-segment mold provided in step (a) forms a one piece vehicle wheel.

17. (Amended) The method according to claim [14] 12 wherein the multi-segment mold provided in step (a) forms a full face wheel disc.

Add new claims 18 through 27 as follows:

18. (New) The apparatus according to claim 2 wherein said ball vibrator device is pneumatically powered and further wherein said ball vibrator includes an

inlet port for receiving compressed air.

19. (New) The apparatus according to claim 18 further including a supply of compressed air connected to said inlet port of said ball vibrator, a solenoid valve included in said compressed air supply for controlling the flow of compressed air into said inlet port of said ball vibrator, and an adjustable pressure regulator included in said compressed air supply, said pressure regulator controlling the speed and force of said ball vibrator.

20. (New) The apparatus according to claim 7 wherein said reciprocating hammer is pneumatically powered and further wherein said vibration device includes an inlet port for receiving compressed air.

21. (New) The method according to claim 10 further including, subsequent to step (d), allowing the metal in the mold cavity to continue to cool before the mold is opened.

22. (New) The method according to claim 10 wherein the vibration device provided in step (a) is pneumatically powered.

23. (New) A method for forming a vehicle wheel component casting comprising the steps of:

- (a) providing a multi-segment gravity fed mold having a top core for gravity casting the wheel component, the top core having a vibration device mounted adjacent thereto, the vibration device being selectively operable to vibrate the mold top core;
- (b) activating the vibration device to vibrate the top core;
- (c) filling the cavity of the wheel component mold by gravity with a charge of molten metal;
- (d) continuing to vibrate the top core while the molten metal cools;
- (d) deactivating the vibration device;
- (e) opening the mold; and

(f) removing the wheel component casting from the mold.

24. (New) The method according to claim 23 wherein the multi-segment mold provided in step (a) forms a one piece vehicle wheel.

25. (New) The method according to claim 23 wherein the multi-segment mold provided in step (a) forms a full face wheel disc.

26. (New) The method according to claim 23 further including, subsequent to step (d), allowing the metal in the mold cavity to continue to cool before the mold is opened.

27. (New) The method according to claim 23 wherein the vibration device provided in step (a) is pneumatically powered.